

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-6 are presently pending in this application, Claims 2-5 having been withdrawn from further consideration by the Examiner, and Claims 1 and 6 having been amended by the present amendment.

In the outstanding Office Action, Claim 6 was rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not enabling to one skilled in the relevant art; and Claims 1 and 6 were rejected under 35 U.S.C. §102(b) as being anticipated by Tani et al. (U.S. Patent 5,294,460).

With regard to the rejection under 35 U.S.C. §112, first paragraph, amended Claim 6 is believed to find clear support in the original disclosure of the present application, for example, by the specification, page 11, lines 4-13, and Figure 1(f). Thus, Claim 6 as currently amended is believed to be in compliance with the requirements of the statute. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work in a joint effort to derive mutually satisfactory solution.

Also, Claim 1 has been amended, and this amendment is believed to be supported by the claims, specification and drawings as originally filed.¹ Thus, no new matter is believed to be added by the claim amendments.

Briefly, Claim 1 as currently amended is directed to a silicon carbide-based, porous, heat-resistant structural material produced by a process including the steps of preparing a porous structural body including a material which is decomposed during firing in an evacuated or an inert atmosphere to form a carbonized composite having the framework

¹ For example, specification, page 11, lines 4-13, and Figure 1(f).

which retains a shape of the porous structural body after the firing, infiltrating a slurry containing a resin used as a carbon source and powdered silicon into the porous structural body, carbonizing the porous structural body, performing reaction-bonding so as to form silicon carbide having sufficient molten silicon wettability such that molten silicon penetrates into the porous structural body and to simultaneously form open pores by the reaction-bonding which decreases a volume of the porous structural body, and infiltrating molten silicon into the open pores of the porous structural body so as to form a composite of silicon carbide and silicon having the porous structural body. By infiltrating molten silicon into the open pores as such, the silicon carbide-based, porous, heat-resistant structural material thus made incorporates silicon, thereby forming a silicon carbide/silicon composite having a more dense structure.

Tani et al. discloses a silicon carbide-carbon fiber composite material, but Tani et al. does not teach or suggest a composite of silicon carbide and silicon having the porous structural body implied by “infiltrating the molten silicon into the open pores of the porous structural body so as to form a composite of silicon carbide and silicon having the porous structural body” in amended Claim 1. On the other hand, Tani et al. discloses a porous composite body including *carbon fibers* and silicon carbide formed by a reaction between a resin and powdered silicon. According to Tani et al., “the carbon fibers in the completed composite material remain intact in the reaction between silicon and carbon,” and “[t]his is presumably the reason for the unexpectedly high mechanical strength of the silicon carbide-based composite body reinforced with carbon fibers as prepared according to the inventive method.”² As described in Comparative Example of Tani et al., the carbon fibers embedded in the composite body could react with molten silicon, and such a reaction may deteriorate

² Tani et al., column 3, lines 10-16.

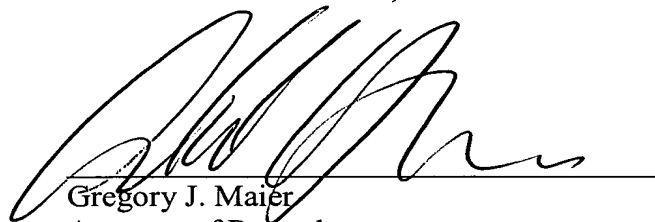
the strength of carbon fibers. Thus, in the Tani et al. method, the molten silicon infiltration as recited in Claim 1 cannot be performed, and therefore the final product obtained by the Tani et al. method does not include or imply a silicon carbide/silicon composite in the structure. Hence, the material recited in Claim 1 is believed to be clearly distinguishable from Tani et al.

Independent Claim 6 as currently amended recites "a composite of silicon carbide and silicon, wherein the composite has a porous structural body." Thus, substantially the same argument as set forth above is believed to be applicable to Claim 6. Hence, Claim 6 is also believed to be distinguishable from Tani et al.

In view of the amendments and discussions presented above, Applicant respectfully submits that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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